PART 512 - CONSTRUCTION

SUBPART A - INTRODUCTION

AL512.00 - General

When a job design is complete and ready for contracting, the state office engineering section (SOES) will assemble the following:

a. Original construction drawings.
b. Specifications.
c. Engineer's cost estimate for the job.
d. Bid schedule.
e. Performance time computations and schedule of operations.
f. Prepare AD-700 (Procurement Request) with resource program manager (RPM) and budget officer's signature.
g. Operation and Maintenance Plan.
h. Design folder.

The SOES will forward the completed items (a.) through (g.) to the contracting officer (CO) for contracting. A courtesy copy of the transmittal letter will be sent to the appropriate assistant state conservationist for field operations (ASTC-FO), district conservationist (DC), resource engineer (RE), and the RPM. A minimum of five copies of (a.) and one copy of (b.) and (h.) will be sent to the RE.

The CO will obtain the required bid prints of the construction drawings, either from an outside firm or from the SOES, prepare the necessary contract documents, and assemble the bid packages. The CO will provide the SOES and RE with a minimum of 5 copies of the completed bid packages.

The CO will schedule the dates of the site showing and bid opening after consulting with the RE and state construction engineer for suitable dates.

The government representative (GR) or contracting officer's technical representative (COTR) will be appointed by the CO based on the recommendations in the approved inspection plan. Inspection personnel will also be appointed per the recommendations of the inspection plan.

Copies of the letters of appointments for the GR/COTR and construction inspection (CI) will be distributed as follows:

- 1 copy to the personnel folder of the employee,
- 1 copy to the contract file,
- 1 copy to the state conservation engineer (SCE),
- 1 copy to the ASTC-FO,
- 1 copy to the employee's supervisor,
- 1 copy to the contractor awarded the bid.

On complex jobs or in situations where the GR/COTR and/or CI have limited experience, a pre-bid conference will be scheduled by the construction engineer prior to the site showing. The conference will be attended by the design engineer (DE) and/or the RE in charge of the design, state construction engineer, GR/COTR, and the CI.

PART 512 - CONSTRUCTION

SUBPART B - PRE-CONSTRUCTION ACTIVITIES

AL512.13 - Pre-construction Conference.

After the award of a contract, the government representative/contracting officer's technical representative (GR/COTR) will request a pre-construction conference be scheduled by the contracting officer (CO) for all major jobs and for any minor jobs as determined to be needed. The conference should be attended by the GR/COTR, construction inspector (CI), CO, and the contractor or their representative(s). On complex jobs, the conference should also include attendance of the state conservation engineer (SCE).

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SUBPART C - EVALUATION OF CONSTRUCTION MATERIALS

AL512.21 - Evaluation Procedures.

(b) Where used materials are allowed in conservation practices, the material shall be examined to determine if it meets or exceeds the minimum material quality, design life, and performance criteria as specified in the appropriate Field Office Technical Guide (FOTG) practice standard or the Alabama Engineering Field Design Manual. Prior to installing used materials, the quality, performance, and design life of used materials must be documented in writing as meeting or exceeding the requirements as specified. The determination shall be made by a person with appropriate engineering job approval authority.

PART 512 - CONSTRUCTION

SUBPART D - QUALITY ASSURANCE ACTIVITIES

AL512.32(a)(2)(iii)

AL512.32 - Quality assurance procedures.

(a) It is the policy of the NRCS in Alabama, regardless of program, to provide the degree of quality assurance required to ensure acceptable results in each element of construction work by providing continuous or periodic construction inspection as outlined in 512.32 of this part.

(1) Non-Contract Work. The person responsible for the design of the job will be responsible for determining the degree of inspection and the elements to be inspected within their engineering job approval authority. The precinct resource engineer (PRE) in consultation with the ASTC(FO) will determine the degree of inspection required for all engineering job classes above the approval authority of the field office employee. The SCE will review and approve the quality assurance plan for all engineering job classes above the engineering job approval authority of the PRE and for all engineering jobs Classes V thru VIII.

(2) Formal Contracts.

(i) The designer will identify in the project design report those job elements and employee qualifications necessary for proper inspection of job elements. Inspector assignments will be based on the qualifications identified in the design report for the job. Normally, one inspector will be assigned to a construction contract. Other inspectors may be detailed to assist as needed on a temporary basis.

(ii) It is important that inspectors be on the job only during the time when actually needed and overtime should be held to a minimum commensurate with job inspection requirements. Overtime must be approved by the state conservationist prior to use. It will be the responsibility of the contracting officer's technical representative (COTR) to keep in close touch with daily construction operations on each contract and provide guidance to the inspector(s) assigned to the job. If an emergency arises during the day which changes the situation, it will be the responsibility of the inspector to determine if continuous or periodic inspection is required and act accordingly. The rationale for making the change should be recorded in the next inspector's daily report.

(iii) A quality assurance plan (QAP) is required for all proposed work identified in project agreements. Elements to be included in the QAP are listed in 512.31(c). QAPs will be included in the design report and/or design folder for each formal contract. A copy of the QAP will be forwarded to the SCE, ASTC(FO), and the contracting officer.

PART 512 - CONSTRUCTION

SUBPART D - QUALITY ASSURANCE ACTIVITIES

AL512.34 - Pre-final and final inspections.

(a) The following procedure will apply for all construction performed by formal contract:

(1) A pre-final inspection will be held when the contractor has substantially completed the work under the terms of the contract. The purpose of the pre-final inspection is to determine if the technical provisions of the contract are in compliance and identify any items of work remaining to be completed. NRCS personnel involved in a pre-final inspection would normally include the contracting officer's technical representative (COTR), construction inspector (CI), and distirct conservationist (DC). The COTR will notify the contracting officer (CO) and all other personnel involved, in as many days in advance as possible, prior to the date desired to hold a pre-final inspection. After consulting with those to be involved, the COTR will establish the final date and time of the pre-final inspection and make appropriate notifications. The COTR will document the results of the pre-final inspection on Form SCS-AS-805, "Checklist Prior to Final Inspection." Copies will be furnished to the CO and SCE. The COTR will inform the contractor and the CO on the results of the inspection.

(2) A final inspection will be held when the contractor has completed the work under the terms of the contract. The final inspection is for the purpose of determining if the contractor has fulfilled his/her contractual obligation and can be relieved of the project. Personnel involved in a final inspection normally includes the CO, COTR, SCE or state construction engineer, CI, DC, ASTC(FO), and the sponsors. The COTR will notify the CO, COTR, SCE, CI, DC, ASTC(FO), and the sponsors, in as many days in advance as possible, of the desired date to hold the final inspection. In some instances, it may be determined before or at the pre-final inspection. Results of the final inspection shall be recorded by the COTR on Form SCS-AS-45. If the SCE is not available for the final inspection, the COTR or state construction engineer, shall sign the final inspection form as acting SCE. Copies of the final inspection shall be furnished to the CO and SCE. At an appropriate time during the final inspection, the DC shall review the operation and maintenance plan with the sponsors.

PART 512 - CONSTRUCTION

SUBPART E - EQUIPMENT, RECORDS, AND COORDINATION

AL512.40

AL512.40 - Engineering equipment.

(a) Minimum engineering equipment needs. Each field office and resource engineer's office shall have the necessary equipment to ensure quality assurance on installation of conservation practices. Equipment needs will vary greatly between field offices due to workloads and type of practices installed. The assistant state conservationists for field operations with the assistance of the precinct resource engineer (PRE) shall develop a list of equipment needs for each field office in their administrative areas. Equipment needs for resource engineers' offices shall be determined by the PRE.

The following is intended to provide a minimum list of equipment from which to add or delete for each office.

Minimum Equipment Needs for Field Offices

Surveying instrument preferably self-leveling or laser
Surveying rod
Clinometer
Engineering chain or tape (100 or 200 feet)
Hand level
Measuring wheel
Measuring tape - 12 and/or 25 feet
Calculator

Minimum Equipment Needs for Resource Engineers' Offices

Total station surveying instrument
Surveying instrument preferably self-leveling or laser.
Surveying rod
Range pole
Clinometer
Engineering chain or tape (100 or 200 feet)
Hand level
Measuring wheel
Measuring tape 12 and/or 25 feet
Calculator
Slump cone
Concrete thermometer
GPS Plugger

AL512.40(b) (con't)

AL512.40(b) Engineering equipment.

Each office is responsible to determine when additional equipment is needed to ensure quality assurance of conservation practices installed within their area of responsibility and to request the equipment in a timely manner through appropriate channels.

Equipment shall be checked in accordance with NEM AL544.05.

AL512.41(c) Records.

The government representative or contracting officer's technical representative will prepare the final inspection report (SCE-AS-45) in the necessary number of copies and forward to the contracting officer, resource program manager, and state conservation engineer. If there are any exceptions, one copy should be forwarded immediately for information and the others forwarded after the exceptions have been completed.

The final pay estimate should be processed not more than 30 days after the final inspection and acceptance of the contract.

AL512.41(c)(3) Construction documentation - Photographs

The resource engineer will be responsible for photographic coverage on all construction contracts under his supervision. The responsible employee may have other employees such as inspectors take the photographs. He shall see that required information on all photographs is properly recorded on Form AL-ADS-20 and in the job diary.

The resource engineer will see that enough photographs are obtained to document contractural activities for legal purposes, such as photographs of:

Normal working conditions and construction methods.
Poor working conditions and construction methods.
Inferior work.
Improper utilization of equipment, etc.

Such photographs are helpful in settling contractor's claims and may be invaluable in the event of an appeal to a Board of Contract Appeal or Civil Court. Exhibit 1 can be used as a checklist for types of photographic documentation needed.

The photographs will be taken as 35mm color slides; however, black and white photographs may be used when other equipment is not immediately available or when physical or lighting conditions make this type more effective.

These photographs will become a part of the ENGINEERING, Construction Records case files for each construction contract.

The documentary photographs should be correlated with detailed events logged in the job diary. Form AL-ADS-20, Index of Documentary Photographs, will be used for this cross reference.

Upon receipt of developed film, the slides will be cataloged. This cataloging will consist of:

1. Numbering each slide - A systematic method of identifying the slide with the job will be used. Example: slides taken on Site No. 11, Hurricane Creek Watershed should be labeled 2013-11-1, 2013-11-2, etc. In addition, the numbering should coincide with the daily sequence in which taken as reflected by the master control.

2. Posting the number of slide to Form No. AL-ADS-20 on the corresponding line showing date and description.

3. Placing slides in an appropriate container, slide holding sheet or the box in which shipped and labeling this container to show:

   a. Name of watershed.
   b. Site number.
   c. Inclusive dates of photo coverage.
   d. Inclusive numbers of slides contained therein.

Upon completion of construction, ALL slides will be transferred along with the rest of the ENGINEERING case file to the appropriate assistant state conservationist within 90 days. The state conservation engineer will review these slides and file those not needed for the permanent files in the file for "Completed Projects" in his office. Only slides which document "as-built" conditions and/or would be of value in the event of structure failure will be retained in the permanent files. (The original slides selected for the permanent file will be returned to the permanent "as-built" file.)

AL512.41(c)(3) Exhibit 1. Procedure for Filing and Maintaining a Cross Reference of Documentary Photographs of Construction Operations

1. Before construction - Take slides and/or photographs that will show condition before work commenses. Use reference points in each slide that will also appear to follow-up photograph.

2. Site Preparation. Photographs of:

    a. Any easement limitations that were violated during site preparation.
    b. Improper methods of stripping and disposal of material.

3. Clearing and Grubbing. At least one photo will be taken during these operations to show methods of operation. One photo will be taken after each operation is completed to show that the area has been completed in accordance with specifications.

4. Conduits. Sufficient photos will be taken to show:

    a. Foundation conditions before conduit is placed.
    b. Type and condition of bedding or cradle for pipe conduits.
    c. Condition of damaged conduit pipe and of repair.
    d. Location and condition of anti-seep collars.
    e. Back-fill around conduit.
    f. Type of pipe joint and brand of pipe used. One typical joint after the pipe has been placed. This might be shown in same photo as anti-seep collar photo.
    g. Any unusual conduits, such as beveled or curved pipe installation.
    h. Any leaks evident while conduit pipe is being tested.

5. Structure Drainage. At least one photo to indicate the extend and to verify the location, type, and placement of filter material and filter drain pipes.

6. Concrete. Sufficient photos to indicate:

    a. Proper forming.
    b. Steel placement.
    c. Honeycombed areas, if any, and repair.
    d. Placement.
    e. Methods of attaching guard rail, trash rack, slide headgates, etc.
    f. Curing procedures.
    g. Methods of testing.

7. Earth Fill. Sufficient photos to indicate:

    a. Equipment conditions.
    b. Methods of operations, such as discs or scarifying equipment, water wagons, compactors, scrapers, etc.
    c. Placement and shape of lifts.
    d. Operation that might affect the efficiency of the operation.
    e. Methods of testing.

8. Rock Riprap

   a. Condition of foundation prior to rock placement.
   b. Placement of filter cloth and/or bedding.
   c. Placement of riprap.
   d. Placement of riprap grout, if used.
   e. Completed work.

9. Gates and Valves

   a. Completed gate assembly in the closed and open position.
   b. Completed gate, stem, and hoist assembly.

10. Channel Improvement. This type of work includes all types of channel improvement work, such as clearing and snagging, stump spray, and all types of channel excavation. Photos will be taken during construction to show:

    a. Equipment at work.
    b. Placement of spoil.
    c. Objectionable material covered with spoil.
    d. Sloughed channel banks.
    e. Rock strata.
    f. Changed conditions such as weak bank soils.
    g. Side inlet after installation.

11. Safety. Photos will be taken of all unsafe construction operations that could endanger public life or property whenever or wherever they occur during construction operations. Follow-up photos must be taken to document the corrected conditions.

12. Critical Area Treatment. When critical area treatment is applied, photos will be made of the following:

    a. Area before treatment.
    b. Method of treatment.
    c. Area showing completed treatment.
    d. Photos of other items will be covered as previously discussed.

There are other important items not covered by this listing but this information should give the photographer a general idea of the type coverage required.

Thorough coverage should be made of any condition which would significantly affect the cost of performing a bid item. Change or unexpected conditions should be well covered.

Any violation of the contract that can be documented with photos should be done during or immediately after it occurs.

Slides and photographs should be taken with a reference object in this picture to give a scale of dimensions.

AL521.41(d)

(d) For engineering job Classes I thru IV conservation practices, the minimum documentation to support quality installation should be as outlined in the Alabama Engineering Field Design Manual. Additional documentation to support quality installation may be necessary based on the complexity of the conservation practice. The person with appropriate engineering job approval authority shall identify any additional items needing testing or documentation and specify the record keeping requirements.

AL512.42 - Coordination between disciplines.

(b) Construction contract modifications. For contract modifications requiring the immediate attention and technical concurrence of the state conservation engineer (SCE), the responsible engineer shall inform the SCE regarding the nature of the needed change and the estimated cost. Upon technical concurrence of the change, the responsible engineer will inform the contracting officer (CO) of the details on the proposed modification and furnish detailed information required to prepare the modification. The CO will obtain funding approval from the appropriate program manager before proceeding with the modification. The CO will advise the responsible engineer whether or not to proceed with the modification. Modified work shall not proceed before the CO approves the modification. Modifications not requiring immediate attention will be prepared by the responsible engineer and forwarded through normal channels to the CO.

Contract modifications involving major changes to the construction plan drawings or require additional construction plan drawings, shall be reviewed and approved (signed plans) by the SCE.

PART 512 - CONSTRUCTION

SUBPART F - "AS-BUILT" DRAWINGS

AL512.50 General.

All construction records, design data, "as-built" drawings, and other pertinent data shall be transmitted to the appropriate assistant state conservationist as soon as possible, but not later than 90 days after acceptance of the project work. A copy of the transmittal letter should be sent to the SCE.

"As-built" drawings should be prepared on black line drawings. The following is a list of items which are to be recorded in the "as-built" drawings: (Record Items 1 through 14 on Sheet 1 when possible, Record Items 1 through 8 on all projects).

1. Name of contractor
2. Contract number
3. Date of contract
4. Project agreement number
5. Date construction started
6. Date construction completed
7. Name of Government Representative or COTR
8. Name of Construction Inspector
9 Hazard class: _____ Height of dam _____ ft.
10. Volume of embankment: _____ cu.yds.
11. Emergency spillway: Type _____ width _____ ft.
    Depth _____ ft. Total capacity _____ cfs
12. Low stage capacity _____ acres
13. High state capacity _____ acres
14. Construction cost: $_____ Federal
    $ _____ Local
15. Name of pipe manufacturer, number of joints, length of each joint of pipe, length of wall fitting, actual three-edge bearing strength, and other pertinent data.
16. List of the joint gap and invert elevation at each joint along the principal spillway.
17. Location, elevation, and description of concrete markers (minimum of two) set during construction for temporary benchmarks and permanent monuments. One should also be set on the outlet structure or support bent.
18. All contract modifications by number, date, and brief description.

For recording details that represent the structures as it was actually constructed, use the following procedures:

1. To record major changes, plot as-constructed cross-section on the following sections: embankment, principal spillway, emergency spillway, keyway, conduit trench, and diversions.

2. To record major changes, plot as-constructed profiles of the following: emergency spillway, structure conduit trench, cut-off trench, outlet channel, foundation drain, and other as required.

AL512.50

AL512.50 General.

3. Note all changes in measurements, elevations, quantities, and other details by lining through the existing data and inserting the correct date above or below.

4. In the legend show the standard symbols which were used to indicate the "as-constructed" details, or show "as-constructed" in the appropriate place on the plans.

In preparing "as-built" plans for channel jobs, use all items above which apply and, in addition, show natural drains, spoil openings, all pipe and drop inlets, maintenance crossings, cattle crossings, drop structures, mitigation measures, and other pertinent data. The "as-built" profile will be based on checked sections at intervals of 500 feet or less. Show the location of all public utilities, such as bridges, pipelines, buried telephone cables, etc., by reference to channel centerline station number and elevation. Reference the centerline station of the channel as constructed to landmarks such as property lines, fences, and fixed improvements so that the centerline stations can be re-established if necessary.

PART 512 - CONSTRUCTION

SUBPART F - "AS-BUILT" DRAWINGS

AL512.53

AL512.53 - Disposition.

The two line film negatives will be transmitted to Administrative Services, along with the original "as-built" plans for inclusion in the completed case file. Copies of the photostat print will be made in the state office and transmitted to the ASTC(FO) for distribution.

The United States Forest Service, Tennessee Valley Authority, or Corps of Engineers are to be provided a copy of the photostat prints if the structure is located on property under their jurisdiction.

The original photostat print will be filed in the "as-built" files in the state office engineering section.